a passive circuit which distorts the input signal, when transmitted therethrough, into an enhanced audio signal by [amplifying] distorting audible frequency components of the input audio signal [, the amplification of the] such that the audible frequency components [in the input audio signal increases] increase in amplitude as [the frequency components] they increase in frequency from a first intermediate frequency up to a [peak] high frequency, wherein audible sound reproduced from the enhanced audio signal exhibits [an] a perceptively improved harmonic quality compared to [that of] audible sound reproduced from the input audio signal.

2. (Amended) The apparatus as set forth in claim 1, wherein [said] the high frequency is a peak high frequency [is] in the range of from about 6 KHz to about 30 KHz.

3. (Amended) The apparatus as set forth in claim 1, wherein [the amplification of] the frequency component at the [peak] high frequency has an amplitude that is from about 1.5 times to about 3.0 times the [amplification] amplitude of [said] the intermediate frequency.

4. (Amended) The apparatus as set forth in claim 1, wherein said passive circuit further [distorts] enhances the input signal [such that the amplification of the] by distorting other audible frequency components [in the input audio signal increases as the] such that the other audible frequency components increase in amplitude as they decrease in frequency from a second intermediate frequency down to a [peak] low frequency, wherein audible sound reproduced from the enhanced audio signal exhibits more of [an] a perceptively improved harmonic quality compared to [that of] audible sound reproduced from the input audio signal.

5. (Amended) The apparatus as set forth in claim 4, wherein the low frequency is a peak low frequency [is] in the range of from about 20 Hz to about 1.0 KHz.

6. (Amended) The apparatus as set forth in claim 4, wherein [the amplitude of] the frequency component at the [peak] low frequency has an amplitude that is from about 1.25 times to about 2.0 times the [amplification] amplitude of [said] the second intermediate frequency.

7. (Amended) The apparatus of claim 4, wherein [said] the first and second intermediate frequencies are the same frequency.

8. (Amended) The apparatus as set forth in claim 1, wherein said passive circuit comprises at least one transformer that effects at least part of the distortion.

9. (Amended) The apparatus as set forth in claim 8, wherein said passive circuit [at least one transformer] comprises a single transformer [, said single transformer effecting amplitude] that effects the distortion of [said] the input signal as defined by a [first] portion of a frequency response curve, the [said first] portion sloping upward in amplitude [increasing non-linearly] from the [said] intermediate frequency [up] to [a peak] the high frequency.

10. (Amended) The apparatus as set forth in claim [8] 4, wherein said passive circuit [at least one transformer] comprises first and second transformers [, said first and second transformers effecting amplitude] that effect the distortion of [said] the input signal as defined by a first portion and a second portion of a frequency response curve, the [said] first portion sloping upward in amplitude [increasing non-linearly] from the [said] first intermediate frequency [up] to the [a peak] high frequency, and [effecting further amplitude distortion of said input signal as defined by a second portion of said frequency response curve, said] the second portion sloping upward in amplitude [increasing non-linearly] from the [a] second intermediate frequency [down] to the [a peak] low frequency.

12. (Amended) An audio system comprising:

an audio signal source for generating an input audio signal [made up] comprising a plurality of frequency components within a band of audible frequencies having a high end and a low end;

[an audio amplifier for generating a speaker drive signal;] and

a passive circuit [for coupling said input audio signal to said audio amplifier, said passive circuit] for distorting said input audio signal, when transmitted therethrough, into an enhanced audio signal by [amplifying] distorting audible frequency components [of said input audio signal] such that the audible frequency components [in the input audio signal] increase in amplitude as they [the frequency components] increase in frequency from an intermediate frequency up to a [peak] high frequency, wherein audible sound reproduced from the enhanced audio signal exhibits [an] a perceptively improved harmonic quality compared to [that of] audible sound reproduced from the input audio signal.

13. (Amended) An audio system as set forth in claim 12, further comprising an audio amplifier for generating a speaker drive signal, wherein said passive circuit couples said input signal to said audio amplifier and no active element is coupled between said audio source and said audio amplifier.

14. (Amended) The [apparatus] audio system as set forth in claim 12, wherein said passive circuit further [distorts] enhances the input signal [such that the] by distorting other audible frequency components [in the input audio signal] such that the other audible frequency components increase in amplitude as [the frequency components] they decrease in frequency from an intermediate frequency down to a [peak] low frequency, wherein audible sound reproduced from the enhanced audio signal exhibits more of [an] a perceptively improved harmonic quality compared to [that of] audible sound reproduced from the input audio signal.

15. (Amended) The [apparatus] audio system as set forth in claim 12, wherein said passive circuit comprises at least one transformer that effects at least part of the distortion.

16. (Amended) The [apparatus] audio system as set forth in claim 15, wherein said passive circuit [at least one transformer] comprises a single transformer [, said single transformer effecting amplitude] that effects the distortion of [said] the input signal as defined by a [first] portion of a frequency response curve, the [said first] portion sloping upward in amplitude [increasing non-linearly] from an intermediate frequency to [a peak] the high frequency.

17. (Amended) The [apparatus] audio system as set forth in claim [15] 14, wherein said passive circuit [at least one transformer] comprises first and second transformers [, said first and second transformers effecting amplitude] that effect the distortion of [said] the input signal as defined by a first portion and a second portion of a frequency response curve, the [said] first portion sloping upward in amplitude [increasing non-linearly] from an intermediate frequency [up] to the [a peak] high frequency, and [effecting further amplitude distortion of said input signal as defined by a second portion of said frequency response curve, said] the second portion sloping upward in amplitude [increasing non-linearly] from an [said] intermediate frequency [down] to the [a peak] low frequency.

18. (Amended) A method of enhancing the quality of electronic audio signals, comprising the steps of:

providing an input audio signal [made up] comprising a plurality of frequency components within a [frequency] band of audible frequencies having a high end and a low end; and

passively distorting the input audio signal into an enhanced audio signal by [passing said input audio signal through a passive circuit to amplify] distorting audible frequency components [of the input signal, the amplification of the] such that the audible frequency components [in the input audio signal increases] increase in amplitude as they [the frequency components] increase

in frequency from an intermediate frequency up to a [peak] high peak frequency, wherein audible sound reproduced from the enhanced audio signal exhibits [an] a perceptively improved harmonic quality compared to [that of] audible sound reproduced from the input audio signal.

19. (Amended) The method as set forth in claim 18, wherein said step of distorting also includes further [distorting] enhancing the input signal [such that the amplification of the] by distorting other audible frequency components [in the input audio signal increases as the] passively such that the other audible frequency components increase in amplitude as they decrease in frequency from an intermediate frequency down to a [peak] low frequency, wherein audible sound reproduced from the enhanced audio signal exhibits more of [an] a perceptively improved harmonic quality compared to [that of] audible sound reproduced from the input audio signal.

Please add new claims 24-35, which read as follows:

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24. (New) The apparatus as recited in claim 1, wherein said passive circuit distorts a substantial number of the audible frequency components of the input audio signal such that the substantial number of audible frequency components increase in amplitude as they increase in frequency from the first intermediate frequency up to the high frequency.

25. (New) The apparatus as recited in claim 1, wherein said passive circuit non-uniformly amplifies the audible frequency components of the input audio signal such that the audible frequency components increase in amplitude as they increase in frequency from the first intermediate frequency up to the high frequency.

26. (New) The apparatus as recited in claim 1, wherein said passive circuit distorts a majority of the frequency components.

27. (New) The apparatus as recited in claim 1, wherein the input audio signal is provided by at least one of a microphone, a recording medium player, a radio, a television, sonar, a computer, a hearing aid, and a telephone.

28. (New) The apparatus as recited in claim 1, wherein said passive circuit distorts the audible frequency components of the input signal such that the audible frequency components exhibit up to a total of only two significant amplitude peaks between the low end and the high end.

29. (New) The apparatus as set forth in claim 9, wherein the portion of the frequency response curve non-linearly slopes upward in amplitude from the intermediate frequency to the high frequency.

30. (New) The apparatus as set forth in claim 10, wherein the first portion of the frequency response curve non-linearly slopes upward in amplitude from the first intermediate frequency to the high frequency and the second portion of the frequency response curve non-linearly slopes upward in amplitude from the second intermediate frequency to the low frequency.

31. (New) The audio system as recited in claim 12, wherein said passive circuit distorts a majority of the frequency components.

32. (New) The audio system as recited in claim 12, wherein said passive circuit distorts the audible frequency components of the input signal such that the audible frequency components exhibit up to a total of only two significant amplitude peaks between the low end and the high end.

33. (New) The method as recited in claim 18, wherein said distorting step involves distorting a majority of the frequency components.

34. (New) An apparatus for enhancing the quality of an input audio signal comprising a plurality of frequency components within a band of audible frequencies having a low end and a high end, said apparatus comprising:

a passive circuit which distorts the input signal, when transmitted therethrough, into an enhanced audio signal by distorting audible frequency components such that the audible frequency components increase in amplitude as they increase in frequency from an intermediate frequency up to a low frequency, wherein audible sound reproduced from the enhanced audio signal exhibits a perceptively improved harmonic quality compared to audible sound reproduced from the input audio signal.

35. (New) The apparatus as recited in claim 1, wherein said passive circuit distorts a substantial number of the audible frequency components of the input audio signal such that the substantial number of audible frequency components increase in amplitude as they decrease in frequency from the intermediate frequency down to the low frequency.

REMARKS

In the Office Action mailed on March 2, 1999, claims 1, 4, 7-9, 12-16 and 18-20 were rejected under 35 U.S.C. § 102(b) as being anticipated by Langford-Smith; claims 2, 3, 5, 6, 10, 11, 17 and 21-23 were rejected under § 103(a) as being unpatentable over Langford-Smith; and claims 10, 11 and 17 were further rejected under § 103(a) as being unpatentable over U.S. Patent No. 4,275,267 to Kurtin et al. in view of Langford-Smith.

Applicants are submitting concurrently with this paper a supplemental IDS including, inter alia, information initially submitted in an IDS mailed on May 27, 1998 but not considered by the Examiner. The Examiner is respectfully requested to consider these references.